

REMARKS

The Office Action mailed December 28, 2006, has been received and reviewed. Claims 2 through 18 and 20 are currently pending in the application. Claims 2 through 18 and 20 stand rejected. Applicants have amended claims 3, 12, and 18, have cancelled claim 20, and respectfully request reconsideration of the application as amended herein.

**35 U.S.C. § 103(a) Obviousness Rejections**

Obviousness Rejection Based on U.S. Patent No. 6,494,942 to Deardurff et al. in view of U.S. Patent No. 6,200,676 to Matsubara et al.

Claims 2 and 3 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Deardurff et al. (U.S. Patent No. 6,494,942) in view of Matsubara et al. (U.S. Patent No. 6,200,676). Applicants respectfully traverse this rejection, as hereinafter set forth.

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, **the prior art reference (or references when combined) must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (Emphasis added).

Deardurff is drawn to an aqueous ink jet ink that includes an azomethine dye having a water solubilizing functional group attached thereto. The water solubilizing group includes use of boronic acids. However, as acknowledged by the Examiner, Deardurff does not teach or suggest a coating layer on a coated print medium that comprises a polyhydroxylated material.

Matsubara is relied upon as disclosing a coated print medium comprising a polyhydroxylated material with a hydroxyl group positioned for binding with the dye. (Office Action at pg. 3). However, the relied-upon portions of Matsubara are limited to a description of a coating composition comprising a polymer of particular molecular weight that is obtained by reacting a polyvalent carboxylic acid, or anhydride or lower alkyl ester thereof with a polyhydroxyl compound of particular molecular weight that is obtained by adding ethylene

oxide and/or propylene oxide to a compound having 2 to 4 active hydrogen atoms.

(Matsubara at Col. 2, lines 10-20).

Amended, independent claim 3 is drawn to a printing system comprising an inkjet ink having a boronic acid dye and a coated print medium, wherein a coating layer on the coated print medium comprises a polyhydroxylated material having at least two hydroxyl groups positioned for binding with the boronic acid dye. However, Deardurff and Matsubara do not teach each and every element of the pending claims. As discussed above, Deardurff does not teach or suggest a coating layer on a coated print medium that comprises a polyhydroxylated material having at least two hydroxyl groups positioned for binding with the boronic acid dye. In contrast, Matsubara is limited to teaching use of a polymer obtained by reacting a polyvalent carboxylic acid, anhydride, or lower alkyl ester thereof with a polyhydroxyl compound obtained by adding ethylene oxide and/or propylene oxide to a compound having 2 to 4 active hydrogen atoms. Although Matsubara describes use of a polymer made from combining a compound having 2 to 4 active hydrogen atoms, it does not teach or suggest a coating comprising a polyhydroxylated material having at least two hydroxyl groups positioned for binding with the boronic acid dye. Therefore, the combination of Deardurff and Matsubara do not teach or suggest all of the claim limitations.

The nonobviousness of independent claim 3 precludes a rejection of claim 2, which depends therefrom because a dependent claim is obvious only if the independent claim from which it depends is obvious. *See In re Fine*, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988), *see also* MPEP § 2143.03. Therefore, the Applicant requests that the Examiner withdraw the 35 U.S.C. § 103(a) obviousness rejection to independent claim 3 and claims 2, 4, 5, 8 and 9 which depend therefrom.

Obviousness Rejection Based on U.S. Patent No. 6,494,942 to Deardurff et al. and U.S. Patent No. 6,200,676 to Matsubara et al., and further in view of U.S. Patent No. 4,877,686 to Riou et al.

Claims 4, 5, 8 and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Deardurff et al. (U.S. Patent No. 6,494,942) and Matsubara et al. (U.S. Patent No. 6,200,676), and further in view of Riou et al. (U.S. Patent No. 4,877,686). Applicants respectfully traverse this rejection, as hereinafter set forth.

Deardurff and Matsubara are as described above.

Riou is drawn to a treated base material for recording sheets for ink jet printing. The coating includes a polyhydroxylic polymeric binder with hydroxyl groups. The coating is gelled or coagulated with boric acid or derivatives thereof during coating and with a filler having high absorption capacity. (See Abstract and Summary sections of Riou). As discussed in the Background of Riou, when printing on the layer of the recording sheets, defects are observed in the shape and uniformity of printing dots, which include migration of ink along fissures or hair cracks in the layer of the printing sheet, causing irregular shapes of dots. (See Riou, Col. 1, line 65 to Col. 2, line 12). To eliminate these defects, Riou proposes producing a coated printing sheet for ink jet printing to reduce hair cracks and improve ink jet printing. (Id. at Col. 2, line 13 to Col. 3, line 36). Riou teaches a sheet that, in the sheet, the polyhydroxylic polymeric binder has been gelled (or coagulated) by reaction with boric acid and/or its derivatives, which “has to take place during the coating operation” to form a “finished product (sheet).” (Id. at Col. 3, line 45 to col. 4, line 12). The two main constituents of the coating layer are the binder and the filler. (Id. at Col. 4, lines 20-24).

However, Deardurff, Matsubara, and Riou do not teach each and every element of the pending claims. As discussed above, Deardurff and Matsubara do not teach or suggest a coating layer on a coated print medium that comprises a polyhydroxylated material having at least two hydroxyl groups positioned for binding with the boronic acid dye (as required in claim 3), having a polyhydroxylated compound having at least two hydroxyl groups on one molecule of the polyhydroxylated compound (as required in claims 4, 5, and 8), or having a polyhydroxylated material comprising at least two hydroxylated compounds, each hydroxylated compound having at least one hydroxyl group (as required in claim 9). In contrast, Riou teaches use of a polyhydroxylated material for use as a layer in a printing sheet, but does not teach or suggest an inkjet ink having a boronic acid dye. Instead, Riou teaches away from such a concept by teaching formation of a printing sheet that is coated with a layer formed from a polyhydroxylic polymeric binder that has been gelled (or coagulated) by reaction with boric acid and/or its derivatives, which gelling occurs during the coating operation, with addition of fillers, to form a finished product (sheet). Thus, Riou teaches formation of a finished, coated printing sheet containing a coagulated layer formed from polymeric binders, fillers, and boric acid. As acknowledged in the Examples of Riou, once

this finished printing sheet is formed, any type of ink can be used, since there is no subsequent reaction expected between the coated layer and the ink. Therefore, Riou teaches away from combining a boronic acid dye with a polyhydroxylated coating layer.

The cited references also do not provide a motivation to combine because the combination of Riou, on the one hand, and Deardurff and Matsubara, on the other, would render the solubized ink of Deardurff, either alone or in combination with Matsubara, inoperable for its intended purpose. If a proposed modification would render the prior art invention being modified inoperable for its intended purpose, then there is no suggestion or motivation to make the proposed modification. M.P.E.P. § 2143.01.

In view of the foregoing, Applicants request that the Examiner withdraw the 35 U.S.C. § 103(a) obviousness rejection to claims 4, 5, 8 and 9.

Obviousness Rejection Based on U.S. Patent No. 6,494,942 to Deardurff et al., U.S. Patent No. 6,200,676 to Matsubara et al., and U.S. Patent No. 4,877,686 to Riou et al., and further in view of U.S. Patent No. 5,380,612 to Kojima et al.

Claims 6, 7, 10 and 11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Deardurff et al. (U.S. Patent No. 6,494,942), Matsubara et al. (U.S. Patent No. 6,200,676), and Riou et al. (U.S. Patent No. 4,877,686), and further in view of Kojima et al. (U.S. Patent No. 5,380,612). Applicants respectfully traverse this rejection, as hereinafter set forth.

Deardurff, Matsubara, and Riou are as described above.

Kojima is relied upon as teaching at least two hydroxyl groups that are positioned on adjacent atoms and on non-adjacent atoms. However, the portions of Kojima cited by the Examiner describe a list of “solvents or dispersing media used in the preparation of a coating solution for the photoconductive layer of the invention.” (Kojima at col. 8, lines 43-66). Therefore, Kojima does not cure the deficiencies of Deardurff, Matsubara, and Riou as described above, namely, the lack of teaching or suggestion to provide a coating layer on the coated print medium comprising a polyhydroxylated material having at least one hydroxyl group positioned for binding with the boronic acid dye. In fact, Kojima teaches no subsequent reaction expected between a coated layer and ink. Therefore, like Riou, Kojima teaches away from combining a boronic acid dye with a polyhydroxylated coating layer.

In view of the foregoing, Applicants request that the Examiner withdraw the 35 U.S.C. § 103(a) obviousness rejection to claims 6, 7, 10 and 11.

Obviousness Rejection Based on U.S. Patent No. 6,494,942 to Deardurff et al. in view of U.S. Patent No. 6,200,676 to Matsubara et al., U.S. Patent No. 4,877,686 to Riou et al., and U.S. Patent No. 5,973,025 to Nigam et al.

Claims 12 through 16, 18 and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Deardurff et al. (U.S. Patent No. 6,494,942) in view of Matsubara et al. (U.S. Patent No. 6,200,676), Riou et al. (U.S. Patent No. 4,877,686), and Nigam et al. (U.S. Patent No. 5,973,025). Applicants respectfully traverse this rejection, as hereinafter set forth.

Deardurff, Matsubara, and Riou are as described above.

Nigam is relied upon as teaching “forming a covalent bond between the boric acid and the coating layer.” However, Applicants disagree with the Examiner’s reading of Nigam. Nigam teaches aqueous ink compositions that comprise an aqueous liquid vehicle, a colorant, and a binder material adapted to ionically or physically entrap the colorant. (See Nigam at Abstract and Col. 8, lines 51-58). As with Deardurff, Nigam does not teach or suggest a coating layer on a coated print medium that comprises a polyhydroxylated material. Nigam is limited to use of binders to form aqueous ink compositions. Additionally, Nigam does not describe, teach or suggest “forming a covalent bond between boric acid and a polyhydroxylated material on a coating layer”, since Nigam does not mention boric acid or coating layers at all. The only mention of covalent bonding relates to discussion of “colorants which tend to be immobilized on the selected resin, e.g., through covalent or ionic attachment.” (Nigam at Col. 9, lines 47-49). This, again, is in reference to colorants and resins (binders) that are contained within the aqueous ink composition being formed.

In view of the foregoing, the combination of Deardurff, Matsubara, and Nigam do not teach or suggest all of the claim limitations. As such, Applicants respectfully request withdrawal of the rejections to claims 12-16 and 18-20.

Obviousness Rejection Based on U.S. Patent No. 6,494,942 to Deardurff et al., U.S. Patent No. 6,200,676 to Matsubara et al., U.S. Patent No. 4,877,686 to Riou et al., and U.S. Patent No. 5,973,025 to Nigam et al. in further view of U.S. Patent No. 5,380,612 to Kojima et al.

Claim 17 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Deardurff et al. (U.S. Patent No. 6,494,942), Matsubara et al. (U.S. Patent No. 6,200,676), Riou et al. (U.S. Patent No. 4,877,686), and Nigam et al. (U.S. Patent No. 5,973,025) in further in view of Kojima et al. (U.S. Patent No. 5,380,612). Applicants respectfully traverse this rejection, as hereinafter set forth.

Deardurff, Matsubara, Riou, Nigam, and Kojima are as described above. As previously described, none of these references, either alone or in combination, describe, teach or suggest “forming a covalent bond between boric acid and a polyhydroxylated material on a coating layer.” In view of the amendments to independent claim 12, from which claim 17 depends, and the aforementioned arguments, Applicants respectfully request withdrawal of the rejections to claim 17.

#### **ENTRY OF AMENDMENTS**

The amendments to claims 3, 12, and 18 above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application. Further, the amendments do not raise new issues or require a further search.

#### **CONCLUSION**

Claims 2-12 and 14-18 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, the Examiner is respectfully invited to contact Applicants' undersigned attorney.

**Serial No. 10/772,725**

Respectfully submitted,



Edgar R. Cataxinos  
Registration No. 39,931  
Attorney for Applicants  
**TRASKBRITT**  
P.O. Box 2550  
Salt Lake City, Utah 84110-2550  
Telephone: 801-532-1922

Date: March 28, 2007  
ERC/dlm:tp

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